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not even the Himalayas interrupt the progress of a pleion or an antipleion. This demonstrates the fact that the thermopleions and antipleions are products of temporary alterations of the general circulation of our atmosphere. A full discussion of the question of which this is but a short summary is to be found in my memoir "L'Enchaînement des Variations Climatiques," published recently by the Belgian Astronomical Society. I am working at present on the dynamical problems connected with the results I have already obtained and hope to be able, in a short time, to propose a method of research by which it will be possible to successfully predict, several months in advance, the climatic anomalies of the different seasons of the year. In connection with this study I intend to examine the yield of cotton and grain.

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THE EFFECTS OF PROLONGED RAPID AND DEEP BREATHING

IN SCIENCE, December 3, D. F. Comstock calls attention to certain phenomena that follow upon a few minutes of enforced deep breathing. These phenomena, as he reports them, are in brief: (1) an apnoëic pause, (2) mental stimulation, (3) increased physical endurance and (4) increased pulse rate.

Several years ago I published¹ the results of fairly extensive experiments upon the effects of forced respiration. A comparison of my results with those of Comstock may not be without interest.

In the first place, the apnoëic pause is unquestioned. Some of my observers, without endeavoring to hold the breath at all, as did Comstock, furnished respiratory tracings in which two minutes of forced breathing was followed by two minutes of complete apnoëa. A very common result was, however, not a pure apnoëa, but a period of slow, shallow respiration with long expiratory phases.

Second, the immediate subjective effects of forced breathing were more or less dizziness,

¹*American Journal of Psychology*, IX., July, 1898, 560-571.

tingling and prickling sensations in the hands and feet, blackness before the eyes, and a feeling of confusion coupled with energy. There was often, too, a secondary experience of exhilaration.

Third, immediately after the cessation of forced breathing there was a noticeable improvement in strength and endurance of grip.

Fourth, a slight quickening of pulse occurred during the breathing, though not by any means so pronounced as that reported by Comstock.

Fifth, and most interesting: actual tests of reaction time, discrimination time, memory-span, visual discrimination of forms and precision of movement, all showed more or less impairment when administered immediately after forced respiration.

It is commonly stated that, while alcohol produces for a time distinct exhilaration and a feeling of exceptional mental readiness and fluency of thought, the actual performance under these conditions does not measure up to one's subjective estimate of it. I suggest, therefore, that, contrary to Comstock's view, forced breathing is probably not so valuable as a mental stimulant as it may appear on the strength of the feeling of exhilaration which it develops. My experiments, however, have no bearing upon the effect of forced breathing during longer intervals of time after normal breathing has been resumed.

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December 6, 1909

QUOTATIONS

THE ANTIVIVISECTION CAMPAIGN

THE antivivisectionists so-called, that is, the misguided, ignorant, and the fanatics who have no objection to live-broiled lobsters, "live feather" pillows, spring traps for mice, sticky fly paper and other forms innumerable of torture of the brute creation, but shudder at the use of animals for the manufacture of vaccine and antitoxins or for the gaining of knowledge that will aid in saving human life, have opened their annual campaign by an attack on the Rockefeller Institute. A newspaper of this city, whose proprietor is said to have a

reason, though no excuse, for disliking medical men, has begun the publication of affidavits from discharged employees of the institute, picturing the "horrors" of animal experiments, particularly the epoch-making experiments of Carrel on blood-vessel anastomosis and the transplantation of viscera and other parts. It is made to appear that these are revelations of the secrets of the torture chamber, though all that these persons have to tell has already been told time and again in reports to societies and in the medical and other scientific journals, and even in the secular press. Among the horrors mentioned is that the experimenter after grafting a leg on a dog "twisted" it to see if the bones were knitting, and the impression intended to be conveyed is that the limb was turned round and round provoking howls of agony. An experimenter, no matter how "cruel" he was, would not be so foolish as to vitiate his experiment by breaking up the adhesions in this senseless way, and what he did, if he "twisted" the leg at all, was what every surgeon does with a fractured bone to assure himself that union is taking place. Another harrowing detail is that the dogs, when operated upon, under an anesthetic it is admitted, lost more or less blood. Still another is that when one of the operations failed and the dog was in pain he was chloroformed at once so that he should not suffer. And so with all the rest of this well-paid-for matter. The head lines are horrible, but any one of moderate intelligence, reading the affidavits and noting the character of the experiments and that they were always done under anesthesia, can see that they were conducted with no more "cruelty" than any surgical operation on man or beast. Many columns of equally hideous and bloody details could be written from the account of a scrubwoman or a day laborer who was allowed the run of the operating room and surgical wards of a hospital for a day or a week; and the surgeons who were racking their nerves and wearying their flesh in the endeavor to relieve pain and save life could with equal effect be called butchers in the stirring head lines.—*Medical Record*.

SCIENTIFIC BOOKS

Les Zooecidies des Plantes d'Europe et du Bassin de la Méditerranée. By C. HOUARD, Docteur es sciences Lauréat de l'Institut. 2 vols., 1,247 pp., 2 full page plates and 1,365 figs. Librairie Scientifique. Paris, A. Hermann. 1908.

The plan of this work is especially interesting to botanists since the cecidia are grouped with reference to the host plants instead of the insects or other animals which cause their formation. The host plants are arranged in accordance with Engler & Prantl's "Pflanzenfamilien" and under each species is given the cecidia which occur upon it, with cross references for those species of cecidia which occur on more than one host. Each family of host plants is preceded with a résumé of the characters of the cecidia which occur upon its species. The work records a total of 6,239 species, with descriptions of each. In general, the descriptions are short and clear so that there should be very little difficulty in identifying the species. However, in some cases the data were evidently too meager to enable the author to give complete descriptions.

The figures are clear and for the most part have been copied from the works of the authors who described the species. Following each species of cecidia are the references to the bibliography. Each species is also accompanied by abbreviations which explain the part of the plant on which it occurs, whether it is simple or compound, whether the metamorphosis occurs in the cecidia or in the ground, the time required for its complete development, and the geographical distribution.

Among the host plants are many groups which in America, so far as we now know, have few or no cecidia, viz., the fungi, algæ, liverworts, mosses and ferns. There are also many families of flowering plants, of which the American representatives do not bear cecidia. About one third of the known genera of American cecidia are also common to Europe, but only a very few species are common to both the old and the new world. Of the few species which are common to both Europe